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SCIENCE

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FRIDAY, MAY 12, 1899.

THE AGE OF THE EARTH AS AN ABODE
FITTED FOR LIFE.*

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§ 1. THE age of the earth as an abode fitted for life is certainly a subject which largely interests mankind in general. For geology it is of vital and fundamental importance—as important as the date of the battle of Hastings is for English history—yet it was very little thought of by geologists of thirty or forty years ago; how little is illustrated by a statement,† which I will now read, given originally from the presidential chair of the Geological Society by Professor Huxley in 1869, when for a second time, after a seven years' interval, he was President of the Society:

"I do not suppose that at the present day any geologist would be found * * * to deny that the rapidity of the rotation of the earth *may* be diminishing, that the sun *may* be waxing dim, or that the earth itself *may* be cooling. Most of us, I suspect, are Gallios, 'who care for none of these things,' being of opinion that, true or fictitious, they have made no practical difference to the earth, during the period of which a record is preserved in stratified deposits."

§ 2. I believe the explanation of how it was possible for Professor Huxley to say that he and other geologists did not care for things on which the age of life on the

* The annual address (1897) of the Victoria Institute, by Lord Kelvin, with additions written at different times from June, 1897, to May, 1898. Printed also in the *Philosophical Magazine*.

† In the printed quotations the italics are mine in every case, not so the capitals in the quotation from Page's Text-book.

MSS. intended or publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson N. Y.

the neurasthenic and sea-sick, with whom emotion is a desire of death rather than life. But we do not think that these and other instances (*e. g.*, play, p. 281) interfere with the general theory that the origin and development of normal emotion is by its life significance. He identifies the voluntarist with the intellectualist theory. "Un organe tend à être, c'était en réalité dire: il y a une pensée dans cet organe qui le veut tel ou tel: l'être qui tend à être est toujours une pensée. Les sentiments indécomposables, irréductibles à toute explication physiologique ou intellectualiste—qui en un sens existent, comme nous l'avons pu conclure de ce qui précède, comme nous le verrons mieux dans le chapitre suivant—impliquent eux-mêmes une traduction intellectualiste." In the next chapter here alluded to he treats of emotion as special, *sui generis*, indecomposable facts of consciousness. He regards 'sentiments proprement dits' as those which are either unanalyzable or whose quality cannot be determined from their component parts. Such emotions are love, friendship, etc., but which are to be studied both from the organic and intellectual points of view. M. Rauh's general conclusion is that analysis is the indispensable preliminary in the study of emotion. This should be followed by tracing them to their organic and intellectual causes and learning the mode of causal action, or, when emotions are unanalyzable, their causal action should be traced. But in all this we must remember that psycho-physiology can only show the body as limit, but not as real cause or even always as measure of emotion. Psychology, here as elsewhere, seeks not unity, but actual practical prevision.

While M. Rauh's work appears to us too cursory and discursive, covering too wide a field and reaching too vague and eclectic conclusions, yet it shows considerable thought, and ought to be suggestive to the student of Emotion.

HIRAM M. STANLEY.

BOOKS RECEIVED.

- Talks to Teachers on Psychology; and to the Students on some of Life's Ideals.* WILLIAM JAMES. New York, Henry Holt & Co. 1899. Pp. xi + 3-1.
- Defective Eyesight.* D. B. ST. JOHN ROOSA, M.D. New York and London, The Macmillan Company. 1899. Pp. ix + 186.
- Le Climat de la Belgique en 1897.* A. LANCASTER. Brussels, Hayez. 1898. Pp. 202.
- La Spécificité Cellulaire.* L. BARD. Paris, G. Carré and C. Naud. 1899. Pp. 100.
- La Sexualité.* F. LE DANTEC. Paris, G. Carré and C. Naud. 1899. Pp. ix + 98.
- La Théorie de Maxwell et les oscillations Hertziennes.* H. POINCARÉ. Paris, G. Carré and C. Naud. Pp. iv + 80.

SOCIETIES AND ACADEMIES.

AMERICAN MATHEMATICAL SOCIETY.

IN the month of April the American Mathematical Society held two meetings. On Saturday, April 1st, the Chicago Section of the Society held its spring meeting at Northwestern University, Evanston, Ill., and on Saturday, April 29th, the regular April meeting of the Society was held at Columbia University, New York City. At the latter meeting, guarantees of support having been received from a large number of universities, the final steps were taken for the publication of the *Transactions* of the Society. The Board of Editors appointed by the Council consists of Professors E. H. Moore, E. W. Brown and Thomas S. Fiske. The first number of the *Transactions* will appear in January, 1900. The *Bulletin* of the Society will hereafter be devoted more exclusively to the publication of critical and historical material and to very short original articles, especially such as present in concise form results of general interest or importance.

At the meeting of the Chicago Section the following papers were read:

- (1) DR. HARRIS HANCOCK: 'Primary functions.'
- (2) PROFESSOR E. W. DAVIS: 'The group of the trigonometric functions.'
- (3) PROFESSOR H. MASCHKE: 'On the continuation of a power series.'
- (4) DR. KURT LAVES: 'Lagrange's differential equations for a solid of variable form derived from Hamilton's principle.'
- (5) PROFESSOR E. H. MOORE: 'The decomposition of modular systems connected with the doubly generalized Fermat theorem (second communication).'
- (6) PROFESSOR JAMES B. SHAW: 'Some generalizations in multiple algebra and matrices.'
- (7) PROFESSOR J. W. A. YOUNG: 'On the first presentations of the fundamental principles of the calculus.'